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54 Improved low ash lubricant composition for internal combustion engines.

57 In accordance with the present invention, there are provided low sulfated ash lubricating oil compositions which comprise an oil of lubricating viscosity as the major component and as the minor component (A) at least about 2 wt% of at least one ashless nitrogen- or ester-containing dispersant, (B) an antioxidant effective amount of at least one oil soluble antioxidant material, and (C) at least one oil soluble dihydrocarbyl dithiophosphate antiwear material wherein the hydrocarbyl groups contain an average of at least 3 carbon atoms, and wherein the lubricating oil is characterized by a total sulfated ash (TSAH) level of from 0.01 to about 0.6 wt% and by a TSAH:dispersant wt:wt ratio of from about 0.01 to about 0.2:1.

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EUROPEAN SEARCH REPORT

Application Number

EP 90 30 3532

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
P,X	EP-A-0 311 319 (EXXON CH. PAT.) * Entire document *	1-31	C 10 M 141/10 C 10 M 141/12
X	FR-A-2 174 021 (TEXACO DEV. CORP.) * Page 1, lines 29-32; page 2, lines 6-9; page 4, lines 18-27; page 4, line 37 - page 5, line 6; page 6, lines 1-27; page 7, examples 1,2; page 9, examples 3,4 *	1-4,9, 11,21- 23,26	C 10 M 161/00 C 10 M 163/00 (C 10 M 141/10 C 10 M 129:10 C 10 M 129:92 C 10 M 129:95 C 10 M 133:04 C 10 M 133:52 C 10 M 135:02 C 10 M 137:02 C 10 M 137:04 C 10 M 137:10 C 10 M 137:10) (C 10 M 141/12 C 10 M 129:92 -/-
A	---	25,27, 30	
A	GB-A- 987 142 (CALIFORNIA RES. CORP.) * Page 2, lines 3-25; page 3, lines 54-58; page 6, lines 32-35 *	1,7-10, 23,25- 27,30	
A	GB-A-1 102 032 (MONSANTO CHEMICALS) * Claims 1-5,17-32; page 3, lines 49-70; page 4, lines 1-17; page 5, lines 1-7 *	1-3,7- 10,12- 17,19, 20,23, 27	
D,A	GB-A-2 062 672 (LUBRIZOL) * Page 1, lines 35-47; page 2, lines 6-34; page 3, lines 2-11; page 6, example 3; page 10, lines 8-11, example A; claims 14,17 *	1-3,5,7 -10,12- 17,19, 20,23, 24	TECHNICAL FIELDS SEARCHED (Int. Cl.5) C 10 M
D,A	EP-A-0 024 146 (EXXON RES. AND ENG.) * Claims 1-17; page 9, line 10 - page 10, line 4; page 11, line 20 - page 12, line 15; page 31, example - page 33, table 1; page 13, line 1 - page 18, line 20 *	1-3,7- 10,12- 20,23, 24	

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		12-11-1990	HILGENGA K.J.
CATEGORY OF CITED DOCUMENTS			
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 5)
A	EP-A-0 167 295 (EXXON RES. AND ENG. CO.) * Page 13, example 1; page 14, line 1 * -----	1-3, 7, 8 10, 12-20	C 10 M 129:95 C 10 M 133:52 C 10 M 137:10 C 10 M 139:00) (C 10 M 161/00 C 10 M 129:10 C 10 M 133:04 C 10 M 135:02 C 10 M 137:02 C 10 M 137:04 C 10 M 137:10 C 10 M 137:10) C 10 M 139:00
			TECHNICAL FIELDS SEARCHED (Int. Cl. 5)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 12-11-1990	Examiner HILGENA K.J.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons * : member of the same patent family, i.e. pending document	

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